

Appl. No. 10/549,267
Amdt. Dated September 26, 2007
Reply to Office Action of June 26, 2007

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REMARKS

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This application has been reviewed in light of the Office Action mailed on June 26, 2007. Claims 1 to 18 are currently pending in the present application. Claims 1, 4 to 6, 8 and 10 to 17 are amended herein. Claims 2 and 7 are cancelled. The amendments are supported by the specification and no new matter has been added by the amendments.

Claims 1, 5, 7 and 10 to 17 stand objected to due to cited informalities. Specifically, the cited claims are in narrative form. Claim 7 is cancelled, accordingly the objection to claim 7 is moot. Claims 1, 5 and 10 to 17 have been amended to correct these deficiencies. Withdrawal of the objections to claims 1, 5 and 10 to 17 is respectfully requested.

Claims 4, 6, 8 and 13 stand objected to under 35 U.S.C. 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject which the applicant regards as the invention. Specifically, claim 4 recites the phrase "such as". The Action states that "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. Claim 4 has been amended to claim:

The method as claimed in Claim 3, wherein said movement is derived from following one or more feature points of the object.

Claim 4 now complies with the requirements of 35 U.S.C. 112.

Claim 6 recites the limitation "their calculated shape". The Action states that "their calculated shape" lacks proper antecedent basis. Claim 6 has been amended to claim:

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The method as claimed in Claim 1, wherein two-dimensional projections are corrected towards a calculated shape by the functionality process of said object.

Claim 6 now complies with the requirements of 35 U.S.C. 112.

Claim 8 recites the limitation "in particular". The Action states that "in particular" is indefinite insofar as the limitation sets forth an example. Claim 8 has been amended to claim:

The method as claimed in Claim 7, applied to coronary arteries.

Claim 8 now complies with the requirements of 35 U.S.C. 112.

Claim 13 recites the limitation "the two methods". The Action states that "the two methods" lacks proper antecedent bases. Claim 13 has been amended to claim:

The method as claimed in Claim 1, further comprising deriving an amount of movement correction from a measured distance between an identified two-dimensional marker/feature position and a reference two-dimensional marker/feature position, or through an ECG analysis.

Claim 13 now complies with the requirements of 35 U.S.C. 112.

Withdrawal of the rejections of claims 4, 6, 8 and 13 under 35 U.S.C. 112 is respectfully requested.

Claims 1, 6, 10, 15, 17 and 18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application No. 2002/0131650 to Rodet et al. (hereinafter "Rodet"). Rodet is cited for disclosing an X-ray imaging apparatus for carrying out a method comprising: forming a set of a plurality of two-dimensional X-ray projection

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images Rf of an object to be examined through a scanning rotation by an X-ray source, which 2D projection images are acquired at repetitive predetermined time instants, correcting each 2D projection Rf individually to compensate for global movement prior to back projecting and reconstructing a three-dimensional volume image by back-projecting the 2D projections. Applicants respectfully submit that Rodet does not expressly or inherently disclose all of the elements set forth in independent claim 1. Thus, Rodet does not anticipate claim 1.

Specifically, Rodet fails to disclose an X-ray imaging method requiring a step of separating an estimated motion of parts of an object into a non-linear temporal component caused by overall contraction within the object, and a linear temporal component caused by overall rotation within the object, as is now claimed by claim 1. Rodet further fails to disclose that motion correction is derived from reference images that are acquired in corresponding instants of the movement of the object in question that is substantially periodic, and which reference images have substantially differing projection orientations. Accordingly, for at least these reasons, independent claim 1 is patentable over Rodet. Accordingly, the rejection under 35 U.S.C. § 102(b) of claim 1 should be withdrawn and claim 1 should be allowed. Claims 6, 10, 15 and 17, which depend directly or indirectly from claim 1 are also patentable for at least the reasons discussed. Claim 18 has been similarly amended, thus claim 18 is patentable for the reasons discussed with respect to claim 1.

Claims 1 to 3 and 13 to 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0126794 to Rasche et al. (hereinafter "Rasche") in view of Rodet. Applicants respectfully submit that the combination of Rasche and Rodet does not render obvious independent claim 1 or claims 2 to 3 and 13 to 14, which depend from claim 1.

As discussed, Rodet fails to disclose an X-ray imaging method requiring a step of separating an estimated motion of parts of an object into a non-linear temporal

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component caused by overall contraction within the object, and a linear temporal component caused by overall rotation within the object, as is now claimed by claim 1. Rodet further fails to disclose that motion correction is derived from reference images that are acquired in corresponding instants of the movement of the object in question that is substantially periodic, and which reference images have substantially differing projection orientations.

Rasche also fails to disclose an X-ray imaging method requiring a step of separating an estimated motion of parts of an object into a non-linear temporal component caused by overall contraction within the object, and a linear temporal component caused by overall rotation within the object, as is now claimed by claim 1, let alone motion correction is derived from reference images that are acquired in corresponding instants of the movement of the object in question that is substantially periodic, and which reference images have substantially differing projection orientations. Claims 2 to 3 and 13 to 14 depend directly or indirectly from claim 1 and provide further features thereto. Accordingly, claims 2 to 3 and 13 to 14 are clearly distinguishable over the combination of Rasche and Rodet for at least the reasons discussed with respect to claim 1. Accordingly, the rejections under 35 U.S.C. § 103(a) of claim 1 to 3 and claims 14 to 16 should be withdrawn and claims 1 to 3 and claims 14 to 16 should be allowed.

Rasche et al. (WO 2103639), Heuscher et al. (2003/0007593 A1) and Carroll et al. (6,501,848) are cited as anticipating claims 4, 5, 7, 9, 11, 12 and 16 in the referenced combinations. Applicants respectfully submit that Rodet, Rasche, Rasche '639, Heuscher and Carroll all fail to disclose an X-ray imaging method requiring a step of separating an estimated motion of parts of an object into a non-linear temporal component caused by overall contraction within the object, and a linear temporal component caused by overall rotation within the object, as is now claimed by claim 1. The references further fail to disclose motion correction derived from reference images that are acquired in corresponding instants of the movement of the object in question that is substantially periodic, and which reference images have substantially differing projection orientations.

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Accordingly, any of the cited combinations fail to anticipate independent claim 1 or the claims, which depend from claim 1. Applicants therefore request that the rejections under 35 U.S.C. § 103(a) of claims 4, 5, 7, 9, 11, 12 and 16, which depend from claim 1 be withdrawn.

Conclusion

In view of the foregoing, Applicants respectfully submit that the specification, the drawings and all claims presented in this application are currently in condition for allowance. Accordingly, Applicants respectfully request favorable consideration and that this application be passed to allowance.

Should any changes to the claims and/or specification be deemed necessary to place the application in condition for allowance, the Examiner is respectfully requested to contact the undersigned to discuss the same.

Applicants' representative believes that this response is being filed in a timely manner. In the event that any extension and/or fee is required for the entry of this amendment the Commissioner is hereby authorized to charge said fee to Deposit Account No. 14-1270. An early and favorable action on the merits is earnestly solicited.

Respectfully submitted,



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